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SKETCH OF THE ORIGIN, DEVELOPMENT, AND PROBABLE DESTINY OF THE RACES OF MEN[1]

By WILLIAM H. HOLMES

In early times the problems of humanity were solved as soon as presented. The fathers settled all questions of the past and present off-hand, and the creeds formulated were blindly accepted by a credulous world; but modern thought has passed beyond these primitive methods, and the history of mankind has taken its proper place in the general plan of life and evolution. Long ago the Greeks, and others, no doubt, had glimpses of the true position of man in the scheme of nature, but the body of independent thinkers was too small to leaven the vast lump of traditional error. Students are now, however, more favorably situated, and are making gratifying headway in the comprehension of man and his relations to the universe. They are working their way backward along the devious course of his coming, and dare to glance forward in the direction of his going. They have learned much of the present and have had many glimpses into the less remote past, while of the far-away past and the deeply shrouded future less vivid impressions are gained.

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[1] Address of the retiring President of the Anthropological Society of Washington, delivered under the auspices of the Washington Academy of Sciences, February 11, 1902.

The attempt to compass so vast a subject is necessarily fraught with great difficulties. There is no adequate viewpoint for such an extended panorama. It is a rule of pictorial art that in order to comprehend the subject clearly the artist's eye must be distant from the picture twice or thrice its width. It is almost equally true that to properly rate the career of an individual one must be generations away, or, if of a race of men, at an indefinitely vast distance. Today, fortunately, the phenomena of the universe are viewed with the eyes both of the past and of the present. The history of nations is seen, as it were, with the eyes of all mankind, with the collective vision of all experience, and the accumulated wisdom is utilized in reading the past and in forming a picture of the future.

From the vantage point that geology furnishes it is seen that many races of creatures have come and gone; have had a beginning, a gradual expansion, and a grading off to extinction or into other forms; and, on closer study, this is found to be a law of all things, animate and inanimate, so nearly universal that an exception may not readily be found. The individual of all creatures, physically speaking, passes through a highly organized form and returns to dust; the families of creatures rise, expand, and vanish; worlds do the same. Nothing is stable save the cause and the laws of change. Unceasing change is the rule of nature; nothing that now is can be the same the second following, and it is only a question of time when transformation shall overtake the individuals, the races, and the worlds.

As my subject is a vast one I shall try to paint it with a broad and sketchy brush, and with the aid of pictures and diagrams will present and emphasize some of the greater truths of man's condition and history, and of man's speculations about man.

Summoning the whole human family into the field of vision, we behold a motley array of fourteen hundred and eighty millions of creatures called men. Taking a hasty survey we find them assembled on the various land areas of the world as nations, tribes, and families; but looking more closely the eye catches the strange distinctions of race. At the right the assemblage is white, and at the left it is black, while between are varying shades of yellow and brown connecting the extremes by insensible gradations. Along with the difference in tint and tone go certain dissimilarities of form, stature, proportion, and physiognomy, emphasizing the distinctions due to color and thus blocking out the groups called races — the Caucasian, the African, the Mongolian, and the American. These distinctions are the most striking and important that can be made, and the races naturally become the subject of special study.

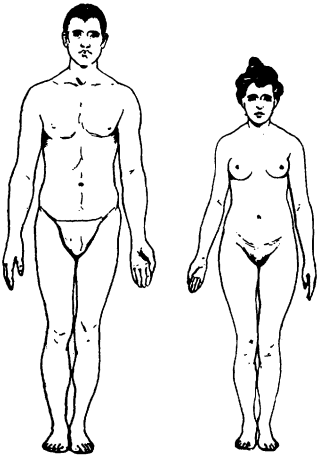
In beginning our examination we are at first embarrassed by differences in appearance that result from culture. The civilized nation seems to have a vast advantage over the uncivilized, and the polished and well-groomed man and woman seem of a higher type than the poor, ignorant, and decrepit, but such differences are only superficial and do not characterize race. To get a clear conception of the real relations of the races we must, in imagination, sweep away all differences in condition and take the average man and woman of each race. What seemed to be important distinctions vanish at once, and we compare race with race on an equal footing. Going from extreme to extreme of the line, we realize how much alike the races are in all essential features. Observe the physical characters — the form of the head, the body, and the limbs; the relative proportions of the parts, the upright position, the graceful movements, and the smooth skin. Note the intellectual qualities, the use of articulate speech, the ability of each to learn the speech of all, to practise the arts of all, to sing the songs of all, and to think the thoughts of all.

The accompanying outline figures (plate XX) take the place of the large series of lantern slides used in illustrating this paper as presented before the Anthropological Society. Nearly all are from photographs and serve to show in a striking manner the general physical unity of the races of men. The views of apes which follow (plate XXI) are quite sufficient to emphasize the wide gap between the human and the brute. It is sometimes asked whether the highest ape is not higher than the lowest man. This question is sufficiently answered by comparing the figures of Australians, who are near the base of the human series, with the gorilla and the chimpanzee, the highest of the brutes.

The characteristics of the Caucasian race are familiar to all. The two examples presented in this series (plate XX, figures 1 and 2) are not drawn directly from life, but being somewhat ideal may well stand at the head of the list, representing our highest conceptions of human form and proportion.

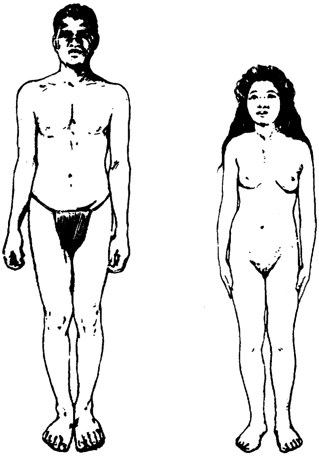
In passing to another race it is observed that we do not leave the typical human characters behind. Of the central Mongolian — the Chinese and their closer allies — no examples are available, but they are no doubt equal in physical development to the border groups, of which figures 3 and 4 are representatives. The first of these is a Filipino man of Luzon, and the second a woman of the same group. Passing on to the straight and wavy-haired peoples of Polynesia, we meet other modified Asiatic types equal in physical perfection to the highest Caucasian.

It is customary to think of the Eskimo as a somewhat modified Asiatic, and of the American Indian, although probably of the same origin, as being so fully differentiated as to be classed as a separate race. Two Eskimo figures, reproduced from photographs published by Captain Peary, are given in figures 5and 6 of the series. Although from time immemorial leading a life of many hardships, the Eskimo are still a remarkably comely race. As to the Indian, there are as fine physical types among them as can be found anywhere in the world. I present only two examples, figures 7 and 8, chosen from the most lowly savages found on the American continent, the houseless, poorly nurtured inhabitants of Tierra del Fuego.



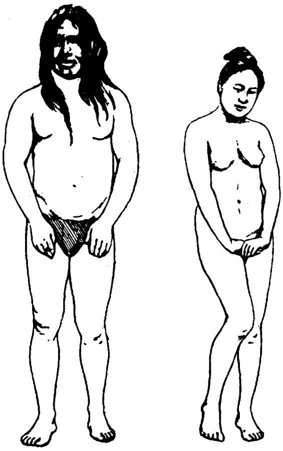
1 2

CAUCASIAN



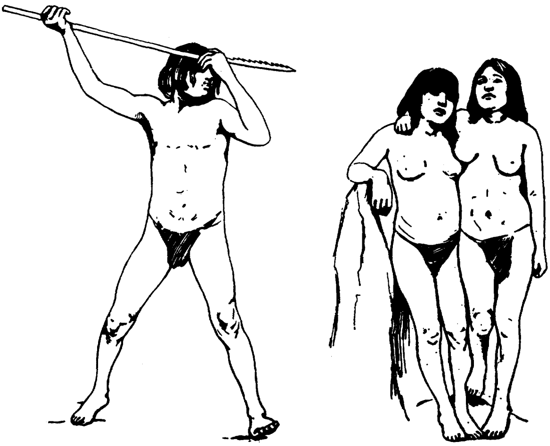
3 4

MONGOLIAN



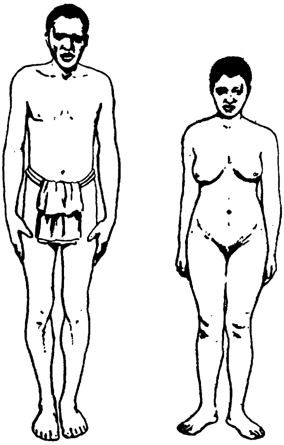
5 6

AMERICAN (ESKIMO)



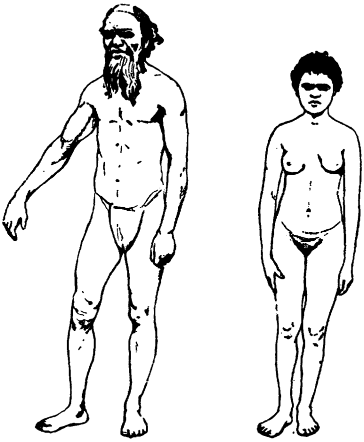
7 8

AMERICAN (INDIAN)



9 10

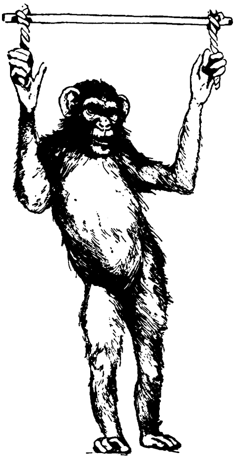
AFRICAN



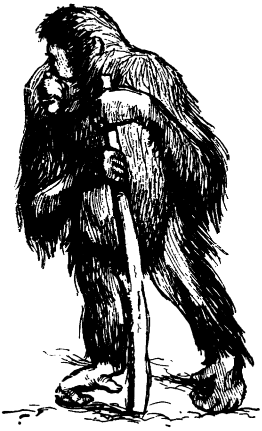
11 12

AUSTRALIAN

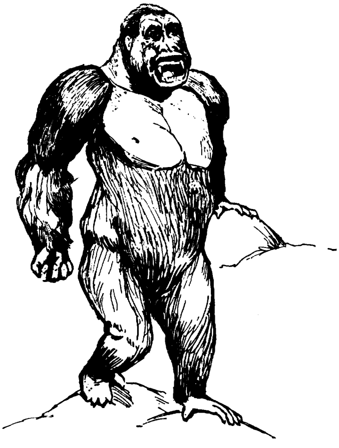
TYPES OF MANKIND



13. CHIMPANZEE



14. ORANG



15. GORILLA

TYPES OF THE APE

It is to the physical characteristics of the so-called lower races that I wish to direct special attention. In color, physiognomy, hair, etc., there are certainly wide distinctions between the black and the white, but in all the elements that go to make up the physical type of *Homo sapiens* there is practical identity. By the crossing of the races the most divergent characters grade imperceptibly one into another. Two ordinary Africans are shown in figures 9 and 10.

The last of the series, the Australian (figures 11 and 12), although now and always, no doubt, a debased savage, is still distinctly a man; and a glance along the line from Caucasian to Australian will make it clear that the range of the human form divine is after all a narrow one, the differences, except in minor features, being difficult to express by graphic means.

To realize how very near to one another the various members of the human family are, it is necessary only to compare them with the innumerable other groups of creatures in the world; indeed, it is quite enough to contrast them with their nearest of kin, the man-like apes (figures 13, 14, 15). These creatures form four groups much more widely separated from one another than are the four races of man from one another, and with a vastly wider gap between their highest form and man. They are, however, considering the entire class of mammals, grouped with men as anthropoids, which are set apart by a very wide interval from their next of kin the lemuroids. How far they stand apart from man is indicated by the illustrations. The twelve figures at the left show the human form in nearly its full range. The three figures at the right stand for the apes, half upright tree-dwelling creatures without articulate speech, long-armed, hairy, strong-jawed, small-brained, and brutal.

There are, however, many suggestions of relationship between man and brute, and we are led to believe that the wide gap must at some period have been bridged. Among all races there are individuals deficient in physique or mental capacity, or debased through poverty and crime whose appearance suggests reversion to lower types. But there are still more real and convincing evidences of the relationship of man and the apes than is furnished by these poor degenerates. Between *Hominidæ and Simiidæ* several fossil forms appear — the much sought missing links. Some of these are lower men (Neanderthal, Spy, etc.), some are intermediate or higher apes (*Dryopithecus*); and one, from the Tertiary formations of Java (*Pithecanthropus erectus*), is midway, or nearly so, between man and ape. These seem like meager proofs indeed to support a proposition of such magnitude, but, since the present is only the initial period of investigation in the great field of human paleontology, it is to be expected that further testimony will be forthcoming and that the geological formations will, in good time, yield ample evidence of the direct genetic kinship of man with the lower forms.

Anatomy and embryology are believed to yield still more convincing proofs that in his origin proud man is linked with Nature's humbler children.

We thus have before us, on the horizon of the present, five groups of creatures — man, chimpanzee, gorilla, orang, and gibbon,— that stand alone among the creatures of the world. Seeking the origin of these allied forms, four questions may be asked and answered.

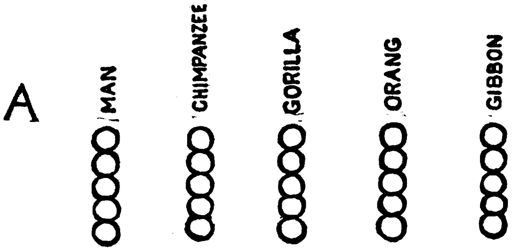


DIAGRAM A.—Theory of the independent creation of perfected forms as opposed to evolution.

First (Diagram A). Were these five groups or any of them independent creations; are they or any one of them the progeny of a single pair, male and female, formed directly from non-sentient matter by a supernatural power? Science says no; this traverses the laws of nature and cannot be considered.

Second (Diagram B). Did they arise independently on separate ancestral stems through a long succession of simpler forms extending back to one or more birth-places of elementary life in the world? Science is agreed that this is improbable in the extreme.

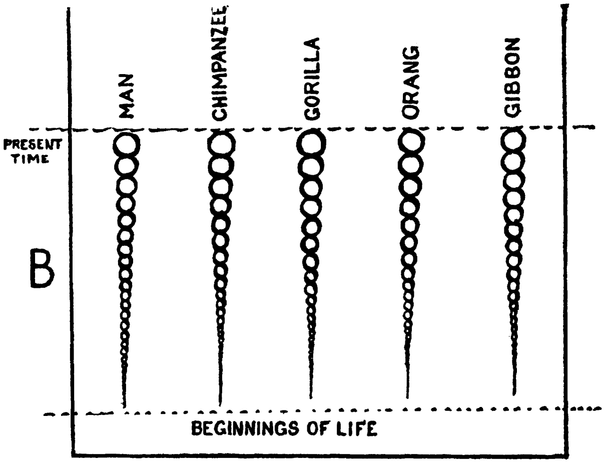


DIAGRAM B.—Theory of independent evolution.

Third (Diagram C). Did one of these forms spring from another, man from chimpanzee, chimpanzee from one of the other known forms, and so on down the line to a beginning in still simpler forms? Few will be found to advocate such a scheme.

Fourth (Diagram D). Have all come up through a succession of antecedent forms from a common ancestral stem, somewhat as branches of a tree, that stem having its ultimate origin ages back in elementary forms of life? This is the theory considered most satisfactory by many men of science. Biology knows no other method. It is not held, however, that the formation of specific groups is as simple a process as the branching of a tree, but the analogy is sufficiently close for purposes of illustration. The five anthropoid groups are believed to represent the surviving branches of a Tertiary stock, and biology, aided by geology, is engaged in a study of their origin and relations. It is assumed further that this generalized stock had its origin through a succession of stocks going back indefinitely and that the problems of man are therefore the problems of the whole system of life in the world. The entire scheme of biotic evolution is thus involved in our investigation and a few simple diagrams will assist in elucidating my conception of the general subject, which, as a matter of course, is largely hypothetical.

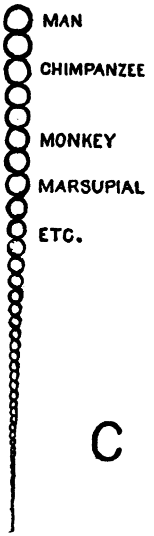


DIAGRAM C.—Theory of the origin of man in known lower forms.

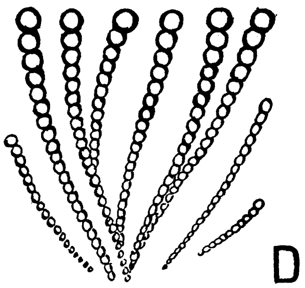


DIAGRAM D.—Theory of the origin of man in some common ancestral form.

In diagram E a number of groups of beings having different life histories are presented. Each is supposed to begin in some period of the distant past and at some point in the world where favorable conditions for the development of life germs prevailed. They advance through the ages pretty much as individual human beings advance through the stages of life — some dying early, some flourishing for awhile, some suddenly cut off, and others persisting through all changes of prosperity and adversity. The periods here assumed may be a million or ten million years in length, and each branchlet may represent ten thousand or ten million individuals as well as many genera and species.

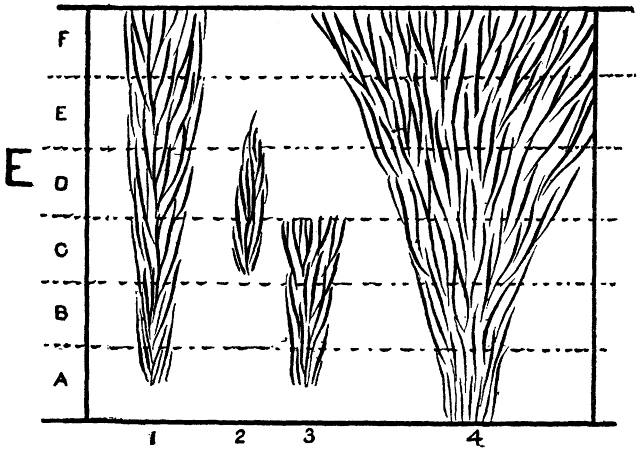


DIAGRAM E.—Life histories of great groups of living forms.

Group 1 begins in period A, and survives with abundant development through all the ages up to the present.

Group 2 begins in period C, and flourishes for a time to die out in E.

Group 3 has its beginning in A, and suffers sudden extinction through adverse changes in its environment at the beginning of D.

Group 4 begins early, in a favorable region of great extent, and thrives and spreads like a vast tree with multitudes of branches rising to the present and peopling the world with its varied progeny.

The vicissitudes to which life groups must have been subjected and the effect of these vicissitudes upon their history may be shown more in detail. In diagram F it is assumed that in period A the life impulse acting on protoplasmic matter produces great numbers of elementary beings, that the group survives with gradual increase in complexity of organization and variation of form through period B; that this general order of events keeps up through C, D, E, and F, to the present. This is doubtless a much more simple and uniform family history than nature would be able to furnish, for with a world full of changes and with vigilant enemies ever at hand, wide variations must have been common, and disasters and extinctions not rare.

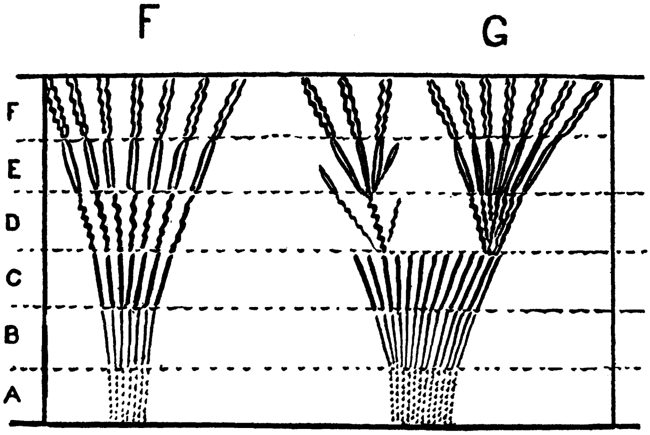


DIAGRAM F.— Group of living forms having a simple history.

DIAGRAM G.—Group of living forms having a diversified history.

In diagram G is presented a life stem exhibiting much more varied fortunes. The beginnings are like those of group F. Vast multitudes of simple organisms are born and give birth to succeeding multitudes advancing and changing, intermingling, separating, uniting and separating again until the end of period C. At this stage the habitat of the group, which may be an island, a continent, a lake, or a sea, undergoes a radical change, and conditions become so strenuous that the group barely escapes annihilation. All branches are cut off and die save two that happen to be more favorably situated than the others; these survive and are able to adapt themselves gradually to the new conditions; but being already far separated in their course upward through periods A, B, and C, they rise through D, E, and F, to the level of the present, strangers to one another and to all other groups of beings in the world. Their relationships could be made out only by anatomical examination, by embryonic analogies, or by the discovery in the rocky records of periods D, E, and F, of fossil remains connecting them backward to the common group at the beginning of period D. It is thus that, in a crude and sketchy way, the histories of great groups of living forms may be outlined.

On some such stem, we believe, and in some such manner man has come up from the earlier forms, parting with many varying groups at succeeding stages to find himself finally on the level of the present in a strange and perplexing state of uncertainty as to what has happened in his past, and as to his relationships with the beings about him, and naturally, without any definite conception of the trend of his future.

If the general scheme of biologic history outlined above be correct, it follows that, no matter what the vicissitudes of any developing group, all of its species, varieties, and individuals necessarily connect back to the primordial forms in which it had its genesis. There may be sports or rapid and exceptional development, but no strays. Nearness of relationship means merely lack of divergence or differentiation, and cannot result from reversion of widely divergent forms or from fortuitous approach of non-consanguineous types.

This may be an appropriate place in which to refer to the question, sometimes raised, as to whether man could have originated in a single pair, or whether at any period of his history there could have existed only a single pair specially created or otherwise existent. Speaking in general terms it may be said that, as we go backward along the course of development of any group of creatures from highly organized to less highly organized forms, we shall expect increase rather than decrease in numbers of individuals. Changes which lead from lower to higher forms are hardly brought about by sudden modification of individuals, for such limited variations cannot affect the group as a whole, but by changes at one and the same time in all the members of the group that happen to come within the influence of the particular conditions inducing or fostering the change. The number of protozoans in a particular group may have been far greater than were the more highly organized invertebrate forms into which they passed, and the invertebrate group may have been a thousand times more numerous than the vertebrate family which followed. Again, the lower vertebrate family may have far exceeded in numbers the higher vertebrate tribes that sprang from them.

It must be admitted, however, that under certain conditions the number of individuals in a particular group may have been very small and that the building up of a new group from a single pair (assuming sex differentiation as an accomplished fact) is a possibility, though hardly a probability. If, for example, a quick change should come over the habitat of a limited group of creatures, so far destroying it that a pair only escaped destruction and survived to reproduce their kind, we would have what might be loosely termed origin in a single pair, but which is more correctly described as survival through a single pair, since in the blood of this pair there would necessarily run the blood of a thousand antecedent generations. Or suppose again that a single pair of some highly organized animal should by some misadventure be cast away upon a land unknown to their kind and that conditions should prove so favorable that a colony was established, it would seem that a new group and in time a distinct race might thus arise. But all this might come to pass without in the least affecting the general uniformity of biological processes and progress, for all individuals and all groups would connect back to the elementary life germ in unbroken sequence. Special creation is in no sense involved. The term monogenesis is sometimes used by writers on ethnology to express the idea of origin in a single pair, but since no instance of such origin is known to biologists and no such possibility is even postulated by them, this use of the word is misleading and should be carefully avoided. This term, however, is also used to signify origin in a common stem or ancestral group, and is thus contrasted with the word polygenesis, which signifies origin in a number of stems or widely variant ancestral groups. Viewing man as presented in the series of outlines (plate XX), it seems in the highest degree improbable that any extraneous form, the result of wider divergence, has crossed with members of this group since the parting of the ways in Tertiary times. I prefer to think of the present races as representing in their diversified types the fullest degree of divergence attained by the human species at any period of its history. At any rate the divergence could never have been much greater than now without resulting in the full separation of the wider variants; and even if, throughout the entire history of the genus *Homo*, there have been decidedly divergent groups corresponding somewhat to our present races, breeding in and in, yet never fully coalescing, I am strongly inclined to the view that monogenesis will as satisfactorily express the genetic relations of these groups or races as any other term.

One of the greatest facts in biology is divergence of forms with multiplying generations. By divergence we must account for the wide range of species and varieties of highly organized creatures in the world. Convergence also is a well known process in biology, but its action would seem to be extremely limited as compared with divergence, since it is operative only within the inter-fertile range. When any two groups are in process of divergence from the common parent, through gradual separation, converging agencies conspire to prevent the parting, but as soon as the non-fertile limit is passed, sexual intermingling and consequent convergence must cease, no matter what the subsequent opportunities of sexual contact. The fact with respect to the human groups is that they have not varied beyond the mutually fertile limit, so that convergence is the natural order, and its amount and degree are regulated by laws that may readily be analyzed. Convergence of varieties is no new fact, for increase of facilities of communication of closely allied groups, no matter what the agencies bringing it about, has always in all biologic history accelerated the integrating movements. This point will be made plain by subsequent diagrams.

In order to indicate more definitely the genetic relations of the human groups and the influences that must have affected their character and history, I shall resort to other diagrams. There appear to be two classes of forces concerned in shaping the destinies of developing groups of living things. The first of these is exerted in the direction of variation, divergence, and differentiation, and is always and everywhere active, and the second is exerted in the direction of convergence and integration, that is to say, toward the maintaining and returning to uniformity of type and direct undivided progression, which, as just indicated, is active only within the range of fertile consanguinity. Of the first class I may mention (1) the so-called inherent tendency to vary — no offspring ever exactly resembling a parent, the variations tending toward repetition and perpetuation; (2) the influence of diversified environments, which bring about or encourage change of form; and (3) the processes of selection which favor one class at the expense of another. The second class includes (1) heredity, which transmits characters with a minimum of change; (2) hybridity, which operates to blend all characters and to obliterate all differences; and (3) the conservative or negative influences of analogous environments, which tend to hold variation in check.

We have already seen how fundamentally alike all men are and have reached the conclusion that it is easier to account for the racial differences observed among men on the theory that they arose within a limited homogeneous group through differentiating agencies, than that such closely related beings should spring from distinct origins indefinitely remote to become finally associated and to fertilely intermingle. The biologist can explain the phenomena in no other way and the anthropologist cannot expect to set up a system of his own. Assuming, then, approximate uniformity of the particular group from which *Homo* sprang, probably in Tertiary times, we seek to illustrate the parts that the various agencies of integration and differentiation have taken in producing the races.

If conditions in a given limited land area are uniform, if the climate is equable, if the land and water are somewhat evenly distributed, if mineral and organic products are alike everywhere, and if no impassable barriers exist, preventing free distribution of populations, variations of a pronounced character would not be apt to arise. Intermingling would be general, constant, and far reaching; and just here we perceive that in considering this question of divergence and differentiation we must take into account the size of the inhabited area in relation to the powers of locomotion and enterprise of the individuals of the group. The varying conditions in two limited, neighboring, connected areas might aid in bringing about specific changes in groups of snails, but hardly in groups of deer.

Diagram H is intended to show that in a limited area the tendency on the part of groups of men to vary and differentiate would be neutralized by the forces of integration. The limiting lines at the right and left represent the boundaries of the area occupied. Intercommunication being easy, tendencies toward varietal partings would be kept in check. A goodly percentage of the families or other limited social groups passing outward to the borders of the area would be turned back again into the general current, always and inevitably. The progeny of one extreme of the area, A, might be the parent of the next generation in the opposite extreme, B, and so on up the ages. In a limited homogeneous area, therefore, pronounced varieties of man could hardly arise.

Enlarge the area (diagram I) and conditions change. Distribution would be so wide that occupants of the more distant districts (C, D) would rarely come in contact, and the flux would not be complete. The more sedentary communities would develop local peculiarities by means of which the people of the east could be distinguished from those of the west, and those of the north would differ from those of the south, but even with an extended

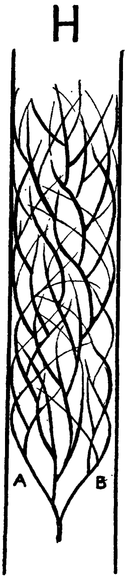


Diagram H.— In a limited area intermingling is general and variation is slight.

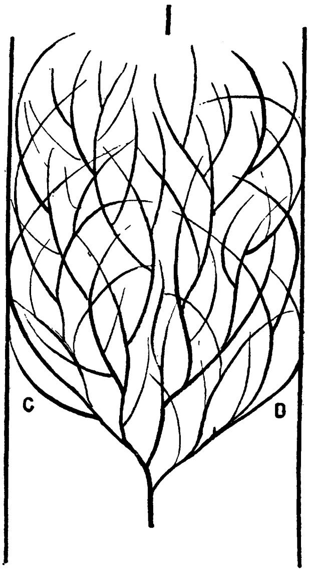


Diagram I.— In an extended area intermingling is not general and variation is pronounced.

continental area, if it be approximately homogeneous in characters, race differences would be extremely slow to develop.

Suppose, however, as indicated in diagram J, which is a map assumed to include four great continental areas, that the habitat is not a unit and that the growing population wanders from the primeval home, or specialization area A, where integration had full sway, into regions separated by mountains or deserts (B, C), and we have at once nuclei of distinct groups and centers of differentiation. But let us imagine that one of the branches (C) pushes out over the margin of the original area and discovers and occupies a new land (E) separated by pronounced barriers (D) from the original habitat. Let us suppose further that this branch becomes completely cut off from the ancestral stock by geologic changes. The integrating agencies become at once inoperative between the two continents while the differentiating tendencies operating independently in the two groups have entire freedom to widen the breach and lay the foundation for race differences.

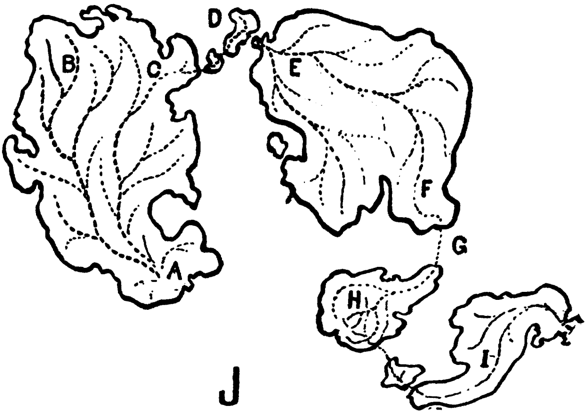


DIAGRAM J.— Map of four great land areas illustrating possible mutations of race.

The idea may be further elaborated by supposing that pioneers of this group find their way to a third continent (H), forming colonies and laying the foundation for a third distinctive people. But let us suppose again that in the course of time this particular land area is invaded by other tribes from a distinct source of population (I) and in such numbers that there is evolved a hybrid people differing from all other existing groups in physical and intellectual characteristics. We have thus within the areas included in the map three nuclei of specialization and three more or less fully differentiated races,—two produced by separation and isolation of divisions of a single stock, and the third by a totally distinct process, the union of two distinct racial strains in one. It should be noted that the founding of such a mongrel race does not imply the obliteration of either of the races furnishing the nucleus. But now let us suppose that the conditions giving rise to expansion and resultant divergence should change and that contraction of the occupied areas should take place. Let us conceive that area H gradually sinks beneath the sea or in some other way becomes uninhabitable. The people are driven, let us say, to F. If the differences between groups H and F are only varietal, coalescence will begin and in due course there will be but a single group. Integration will have done its perfect work. If the process should go on and continent after continent disappear until an island only is left at A, the whole effect of expansion and differentiation would be destroyed and a single uniform group would result. If, on the other hand, differentiation had gone so far on each great land area as to establish permanent specific differences, area A would in the end hold within its limited bounds three groups of creatures, related to one another in genesis, but forever set apart as distinct forms.

The land areas of the world have been subject to change always, and the races of men have been shifted from place to place with ever-varying results. Changes in climate and food supply, and movements of rival tribes of men and beasts have aided in keeping the human magma plastic, and the agencies of divergence and convergence have been free to model and remodel the groups.

Having seen how fully the character and destinies of the human groups are necessarily under the control of the areas occupied, their relations and conditions, let us turn to the geography of this world of ours. It is seen that the land areas are widely separated and that the conditions in one differ radically from those in another. There are four or more distinct areas of large size, and all have been occupied for ages, the populations being so completely separated that one knew not of the existence of the other until in recent times. Is it to be expected, then, that all men would be alike? Far from it. Such a result would be absolutely impossible. The differentiating agencies have had full control while the integrating forces have operated mainly within the separate groups. The races are the natural and inevitable result, directly or indirectly, of occupancy of the isolated continental areas of the earth by primitive man.

I wish now to combine in a single diagram (K) a summary of my conception of the development of the species and the races from the period of specialization of the anthropoids up to the present time. The side lines in this diagram stand for the limits of the world within which the branching tree of the *Hominidæ* (A) springs up. The horizontal lines connecting across, mark the periods by means of which we separate the stages of development.

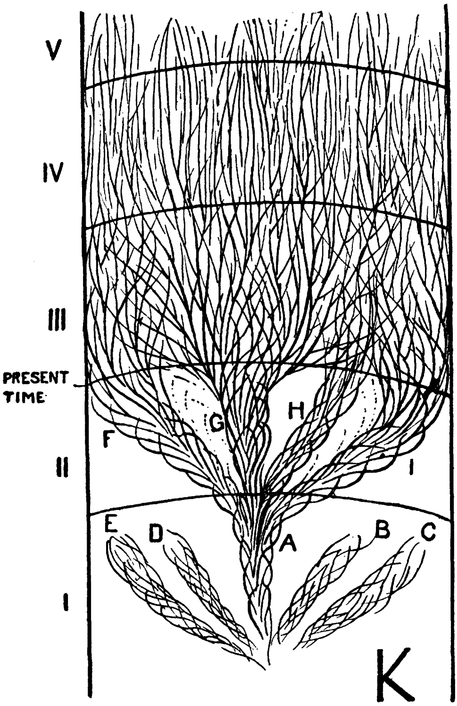


DIAGRAM K.— Showing origin of the genus *Homo* (A) in Tertiary time, separation into races through isolation in Post-Tertiary time (F, G, H, I), and theoretic blending of all forms in future time.

The first period (I) is that which witnesses the specialization of the group of creatures (A) from which man sprang. It may be regarded as corresponding somewhat closely to the Tertiary period as formulated by geologists. We know not the exact number of closely related branches at that time, but it is held that the prospective human stem flourished and rose above the others. In the diagram the collateral branches B, C, D, E, are left undeveloped in order that *Homo* (A) may have a clear field — in order that we may illustrate more clearly the manner in which this group, according to our best interpretation, spread from its natal district and occupied the habitable world.

That the home of the human precursor was, at this stage of his development, restricted in area is assumed on reasonable grounds. The apes and monkeys of today, which are believed to correspond in grade of development to the human stock of the natal period, are not widely distributed, but occupy very restricted areas and such as are particularly suited to their arboreal habits and their rather delicate constitutions. There is no reason to believe that man at a corresponding stage was more hardy, more enterprising, or more widely scattered.

In the diagram, therefore, the stem A is made narrow below, widening upward, thus suggesting expansion of area with increase in numbers, energy, and intelligence. This expansion was, no doubt, very slow and may or may not have extended to the farthest limits of the land area occupied, but it was prophetic of the greater expansions to be realized in period II. We cannot know in just what part of the world these events took place, just where the prehuman group was transmuted into the human. It may have been in Europe, Asia, Africa, Eurasia, Eurafrica, Lemuria, or America, but this does not matter here. We reach the conclusion that at or near the close of Tertiary time (period I) the change occurred and that upright, self-conscious man took his place permanently in the van of progress. We conceive further that, about this time, the continents assumed approximately their present dimensions and relations and that this creature man, breaking over the barriers that formerly hedged him in, was ready to engage in their conquest. The simple, initial, integrate period of his career had now closed, and a period of marvelous expansion supervened (period II).

Spreading gradually into the various continental areas the incipient human groups, as yet reasonably homogeneous in character, became widely separated. Some were quite completely isolated and went their separate ways, becoming sharply demarcated from the rest. Others less fully isolated continued to intermingle along the margins of the areas occupied, so that gradations of characters occur, and in some cases the resulting hybrid peoples have probably occupied separate areas long enough to become well-established varieties. Three or four groups only became so widely separated and fixed in physical characters that students are agreed to call them separate races, but these comprise the great body of mankind.

The line marking the close of period II stands for the present time, and F, G, H, and I are the races now in evidence. Let us consider what is happening along this line today. The end of the second period—the isolated specializing period—has come for the races, and changes of a momentous kind are being initiated. Man has spread and occupied the world, and the resulting isolations and partial isolations on continent and island of peoples having meager artificial means of transportation, have brought about, directly or indirectly, the variations called races; but the period of group isolation and consequent race specialization is at an end. In the last few hundred years the sea-going ship and the railway have been invented and the extremes of the world are no farther apart than were the opposite shores of a good-sized island when, a little while ago, all men went afoot. The period of differentiation is closed forever and the period of universal integration is upon us. We do not see how rapid these movements are, but contrasted with the changes of earlier days they are as a hurricane compared with the morning zephyr. The continent of America has changed its inhabitants as in the twinkling of an eye, and

Asia, Africa, Australia, and the islands of the Pacific are in the throes of race disintegration. Today each man may go two hundred and forty times around the world in his short lifetime. A single individual may be the parent of progeny in every important land area of the world ; and this is only the beginning — the first few hundred years — of a period to which millions must be assigned. Then how shall we project the lines of the diagram into the future ? There can be but one answer.

Very briefly we may outline the inevitable course of human history. In period III the races will fade out and disappear as the combined result of miscegenation and the blotting out of the weaker branches. The world will be filled to overflowing with a generalized race in which the dominating blood will be that of the race that today has the strongest claim physically and intellectually to take possession of all the resources of the land and the sea. Blood and culture will be cosmopolitan. Man, occupying every available foot of land on the globe, will be a closer unit than he was on the day far back in period I, when, in a limited area hidden away in the broad expanse of some unidentified continent, the agencies of specialization first shaped up the species.

But there will be an end to the third period. Although it may be far away, it will come as certainly as it is that all things change. The nature of that coming can only be surmised ; all depends not on what man may do, although he may do much, but on cosmic mutations, on the maturity and decay, on the lease of life, of the frail little body we call the world, since beyond its restricted limits no mundane creature may extend its conquests. Many surmises may be made as to the course of the declining period of the species and its dwelling place, but these can take only the form of unanswered queries, which may give way to other queries as knowledge of cosmic conditions advances and matures. Such speculations may be utterly unavailing, but they are in no way misleading and must ever be fraught with the deepest interest.

The end must come, but we can only guess what that coming will be like:

(1) Will man multiply, fill the world, and exhaust its resources in period IV, gradually abandon commerce, then discontinue intercontinental intercourse, grow more and more impoverished, lapse through isolation into separate groups again and then into degenerate races of savages, ending a miserable existence in the few areas capable of sustaining life the longest? This result is suggested in the fifth and last period of the diagram.

(2) Will similar results possibly follow from other causes? Will the waters of the surface, already largely absorbed into the earth's crust, sink deeper and deeper as the cooling of the interior goes on until the surface is a desiccated desert unfit for man or beast?

(3) Will the waters continue to act as they act today upon the land, little by little, but nevertheless surely, cut down the hills and mountains until all the land is beneath the sea save such artificial continents as man himself may raise?

(4) Will changes in the atmosphere, now said to be going on, gradually obliterate all life?

(5) In the course of cosmic mutations, will the sun's heat cease to warm this poor clod and a deadly chill fall upon all living things?

(6) Will disaster come to the world through encountering a comet or other wandering body, and will it become part of a new world and the home of a new people? or

(7) Will the forces which now hold the planet in its even course gradually loose their initial control, permitting its final absorption into the central body, the sun?

Whatsoever the course of cosmic events, there is nothing surer than that there will come an end to the races that now are, to mankind as a whole, and to the world he inhabits.